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CDC's 60th Anniversary: Director's Perspective --- Jeffrey P. Koplan, M.D., M.P.H., 1998--2002

Please note: The text of this report has been corrected and does not correspond to the official electronic PDF version.

CDC: Known and Trusted

CDC approached the new millennium with strong programs, strong partners, and a strong reputation. Emblematic of scientific integrity, evidence-based information, and public trust, the quality of CDC's "brand" rivaled any in corporate America and was unique among federal agencies. CDC built on this brand recognition to advance its public health mission into the 21st century. Introduction of a new design element (Figure 1) showcased the agency as a valuable federal asset.

Beyond the importance of name recognition was the real substance of what CDC and public health represented to the nation and to the world. Taking a cue from the "top 10" lists proliferating at the end of the century, a series in the *Morbidity and Mortality Weekly Report* (*MMWR*) distilled reflections about 10 major public health accomplishments into a case for the value of public health (*1*). Each of the 10 breakthroughs highlighted an achievement that had a profound effect on the length and quality of the lives of Americans. The series celebrated achievements in immunizations, motor-vehicle safety, safer workplaces, control of infectious diseases, reduced deaths from coronary artery disease and stroke, safer and healthier foods, healthier mothers and infants, family planning, fluoridation of drinking water, and recognition of tobacco use as a health hazard. This inventory of landmark accomplishments provided rich material to demonstrate the value of public health and remains an inspiration for future achievements.

The 50th anniversary of the Epidemic Intelligence Service (EIS), a year-long celebration starting in February 2001, provided another opportunity to reflect on past successes (2). For the agency's premier cadre of epidemiologists, known worldwide for their *esprit de corps* and service on the front lines (Figure 2), the recognition illuminated a half-century of work in responding to thousands of public health threats around the globe, from polio to toxic shock, asthma to Ebola. The EIS began during the Cold War as a response to the threat of biological warfare and manmade epidemics. In its 50th year, the EIS came full circle when called on to respond to the terrorist attacks in the fall of 2001.

To launch the agency into the 21st century, CDC identified three areas for priority attention. These priority areas were 1) improving the science base to drive public health programs; 2) renovating and investing in the

public health infrastructure; and 3) expanding CDC's role in global health.

Maintaining the Basics of Public Health

CDC's accomplishments have always stemmed from broad-based programs grounded in the underpinnings of public health: epidemiology, surveillance, laboratory science, education and communication, policy intervention, and preparedness (*3*). These programs not only save lives but also improve the quality of life.

Since CDC's early years, the agency has counted immunization among its most vital programs, recognizing it as a core public health activity and perhaps the best example of primary prevention. With measles elimination as the main driver, the National Immunization Program achieved major advances in coverage and health impact and provided lessons for the future.

At the beginning of the 21st century, childhood immunization levels in the United States were at or near record highs, and most vaccine-preventable diseases were at record lows (*4*). Racial and ethnic disparities in vaccination coverage had also been markedly reduced. As the culmination of a 34-year effort, measles was declared no longer endemic in the nation, and the Western Hemisphere was close to interrupting measles transmission (*5*) and moving toward elimination of rubella.

Other achievements were less obvious but no less important. As chronicled in *MMWR*, CDC continued to respond routinely to outbreaks and to address risk factors for adverse health outcomes. One of these success stories was the decrease in neural tube defects resulting from the requirement, as of 1998, that manufacturers add folic acid to enriched flour and non--whole-grain products (*6*).

Along with the familiar outbreaks of infectious diseases, CDC also tackled a parade of unusual epidemics and new and unforeseen threats. Increased travel and migration, international trade and global transport of foods and other products, economic disruptions, and microbial adaptation accelerated and expanded the movement of disease. A new paramyxovirus, Nipah virus, was identified in 1999 as the cause of an outbreak of severe encephalitis in persons with close contact with pigs in Malaysia and Singapore (*7*). An outbreak in Saudi Arabia and Yemen in 2000 marked the first appearance of Rift Valley fever outside Africa (*8*). The summer of 1999 brought West Nile virus to New York City, the first time that this mosquito-borne virus was reported in the Western Hemisphere (*9*).

CDC renewed its commitment to infectious disease control in the face of these and other threats, including a virulent strain of avian influenza, a human variant of bovine spongiform encephalopathy, and new drug-resistant forms of *Staphylococcus aureus*, plus the heightened awareness of bioterrorism. Noteworthy new programs included FoodNet, an active surveillance network for foodborne disease; PulseNet, a molecular subtyping network that received Innovations in American Government awards in 1999 and 2002; and multifaceted programs to reduce antimicrobial resistance by decreasing unnecessary prescribing of and demand for antibiotics.

Meeting New Public Health Challenges

By 1998, CDC had long since extended its public health mandate to noninfectious conditions. The formation of the National Center for Chronic Disease Prevention and Health Promotion a decade before was a formal acknowledgement of the growing importance of noncommunicable conditions, behaviors, and changing environments as major contributors to death and disability. New programs targeted multiple levels (individual, institutional, community, state, national, and international) to address chronic diseases and their risk factors.

Obesity. CDC was a vanguard in recognizing the nation's growing obesity epidemic, creating solutions based on scientific data and disseminating and popularizing these solutions for maximum impact. Although today the consequences of unhealthy dietary choices, sedentary lifestyles, and "supersized" food portions are familiar, in the late 1990s their potential for harm was underestimated. CDC research published in 1999 documented for the first time the nation's rapidly increasing obesity rates and impending epidemic in all U.S. states, regions, and demographic groups (*10*).

One novel prevention approach was a campaign to tackle the societal and health problems of inactivity and obesity among U.S. children. In 2001, Congress appropriated $125 million for CDC to develop a national media campaign to change children's health behaviors. CDC's response to this broad mandate was to address the sedentary lifestyle of "tweens" (i.e., children aged 9--13 years) through VERB, an innovative and expansive campaign based on behavioral science theory and contemporary principles of marketing, which produced measurable positive results (*11*).

Tobacco. Despite considerable achievements in reducing smoking prevalence, tobacco use was still responsible for one of every five U.S. deaths at the end of the 20th century. In 1999, CDC's Office on Smoking and Health created the National Tobacco Control Program to encourage coordinated efforts to reduce tobacco-related diseases and deaths. The National Youth Tobacco Survey measured the tobacco-related beliefs, attitudes, and behavior of youth and was the first to gather data from both high-school and middle-school students. Findings were used to design strategies for youth-focused anti-tobacco campaigns.

Violence. After nearly a decade of work, CDC's injury- and violence-prevention programs also were expanding their reach and impact. With the national homicide rate for youth aged <19 years averaging nine deaths per day, CDC issued *Best Practices of Youth Violence Prevention: A Sourcebook for Community Action* (*12*), the first publication of its kind to draw on real-world experiences to prevent violence among children and adolescents. CDC also supported a series of unique academic centers of excellence in youth violence prevention at U.S. colleges and universities.

Disparities. As these programs started to reap benefits, rates of decline in adverse health outcomes among certain racial and ethnic groups lagged behind overall declines. Work done by David Satcher as previous CDC director and then as Surgeon General contributed to a new initiative, Racial and Ethnic Approaches to Community Health (REACH). Through the REACH cooperative agreement, CDC began funding frontline coalitions to design, implement, and evaluate community-driven strategies to reduce disparities in cardiovascular disease, diabetes, infant mortality, breast and cervical cancer, immunizations, and HIV/AIDS.

Since its inception, REACH has produced measurable and significant reductions in health risks and improved management of chronic diseases in some of the nation's most disadvantaged and historically intractable communities. Examples include increases in the proportion of African Americans and Hispanics screened for cholesterol and the percentage of Vietnamese women receiving Pap tests (*13*).

New Infrastructure for a New Millennium

A central goal during this period was strengthening the public health system. New buildings and facilities for CDC's Clifton Road campus provided the most obvious expression of this goal but formed only one piece of the bigger picture. The focus also extended to state and local public health agencies, the public health workforce, and preparedness for bioterrorism and other unforeseen threats.

Master plan for CDC facilities. The start of a new millennium provided an unprecedented opportunity to move CDC into the 21st century with a $1 billion master plan for consolidation and expansion of facilities. Many CDC staff were working in crowded facilities, some antedating CDC's founding in the 1940s, and in dilapidated spaces converted from animal rooms and closets. Antiquated facilities were impeding efforts to

recruit and retain staff and were inadequate to support and sustain the ambitious programs needed to move public health into a new era.

Thanks to the efforts of Dr. Satcher and others, the groundwork for a major expansion and rejuvenation of CDC's Clifton Road facilities had been laid: a master plan had been developed and land procured. The existing facilities plan was accelerated, and whereas much of the previous development of CDC facilities had been piece by piece, a new vision was developed of a true campus and the co-location of formerly disparate groups into cohesive units. The effort focused on development of two primary campuses in Atlanta: Clifton Road and Chamblee. Key national business leaders from the Atlanta community provided crucial support in making the facilities plan a reality. On December 18, 2000, CDC celebrated the opening of its new state-of-the-art research facility, the Edward R. Roybal Laboratory Building, marking the first phase of a decade-long process to give CDC's first-rate employees the first-rate tools they need to protect health and safety.

Workforce capacity development. Beyond building infrastructure through construction projects was the importance of building the capacity of the public health workforce. New challenges in public health generated need for training, strategies, and technologies. The Public Health Prevention Specialist Program, begun in 1997, recruited talented professionals who filled frontline field assignments with state and local agencies. The Leadership Management Institute trained annual cohorts of middle- and senior-level leaders from CDC.

CDC also invested in building public health infrastructure at the state and local levels. The Public Health Practice Program Office played an essential role in supporting state and local health departments and securing their stature as CDC's primary constituents.

Bioterrorism preparedness. As early as 1998, CDC had begun planning to enhance capacity to respond to bioterrorism, and in 1999 awarded funding to states and major cities to improve their public health response to bioterrorist events. Concomitantly, CDC created the Laboratory Response Network to provide the highest level of laboratory expertise and support during responses to naturally occurring as well as intentionally caused outbreaks. Well before any bioterrorism event, CDC also accelerated production of a new smallpox vaccine to protect the population in the event of a smallpox release.

Additional enhancements in bioterrorism preparedness included the Health Alert Network, which links local, state, and federal health agencies and provides an electronic platform for emergency alerts and real-time discussion; the Epidemic Information Exchange (Epi-X), a secure communications tool for sharing health surveillance information; and the National Pharmaceutical Stockpile (now the Strategic National Stockpile), which ensures the rapid delivery of drugs and materiel to the site of a public health emergency. The funding invested in enhancing medical expertise, laboratories, and communication networks to respond to bioterrorism and other emergency situations also reinvigorated the public health infrastructure to deal with everyday community health problems. An *MMWR* report released in April 2001 outlined steps needed at state and local public health agencies to protect the nation from bioterrorism (*14*).

A nation challenged. These intense preparedness efforts were tested in the fall of 2001, with two events that in quick succession indelibly changed Americans' beliefs in the invulnerability of their national borders and turned the threat of bioterrorism into a reality. When two commercial aircraft were intentionally crashed into the World Trade Center towers, destroying them and the surrounding areas of lower Manhattan on September 11, 2001, the New York City Department of Health immediately activated its emergency response protocol and began to assess the public health and medical impact of the attack (*15*).

In response to the events in Manhattan and the related attack on the Pentagon, the Federal Response Plan also was activated. Within hours, the first CDC staff members were en route to New York City, and CDC had

delivered a shipment of medical supplies, marking the first emergency mobilization of the National Pharmaceutical Stockpile. The deployment of 34 EIS officers to New York City on September 14 was at that time the largest-ever single deployment to one location.

Within weeks, another defining moment entered the nation's consciousness. On October 4, 2001, CDC and state and local public health authorities reported a case of inhalational anthrax in Florida (*16*). This was the first recognized case of anthrax in the United States in a quarter century and the first in U.S. history to result from an intentional act. The ensuing epidemiologic and criminal investigations revealed a series of 22 cases in multiple locations across the Eastern seaboard resulting from intentional delivery of *Bacillus anthracis* spores through mailed letters or packages. Anthrax-laced letters ultimately were implicated in the deaths of five persons. An additional 17 persons were infected, and nearly 30,000 more received prophylactic antibiotics as a consequence of possible exposure to *B. anthracis* spores.

The agency mobilized its resources with characteristic speed, expertise, and resilience. In the largest response in CDC's history, more than 500 epidemiologic, laboratory, industrial hygiene, communications, and other staff were detailed from their regular jobs, laboratories were reassigned to anthrax investigations, field teams were established in the outbreak sites, and researchers worked 24-hour days on the investigation.

The events created formidable challenges in management, coordination, and communication at CDC and brought unprecedented public scrutiny as the agency coped with the evolving outbreak itself and fast-track preparations for its new role in the war on bioterrorism. Public health agencies became part of the government-wide effort to combat bioterrorism, in partnership with agencies responsible for security and law enforcement, emergency response, intelligence, and the military. Preparation for a potential bioterrorism attack spotlighted the importance of identifying unusual health events early and responding rapidly in a highly coordinated fashion to prevent large-scale devastation.

The events also provided vivid examples of the importance of a stronger public health infrastructure. For example, news stories recounting how county and state public health officials investigated the first and subsequent cases of anthrax documented the value of strong local public health capacity (*17*). The rapid recognition of anthrax by a laboratorian in the Florida Department of Health, who recently had been instructed in anthrax diagnosis at CDC, demonstrated the importance of training and workforce development. In response to this unprecedented attention and recognition, CDC funding to state and local health departments for terrorism preparedness was increased to a historic $1 billion in fiscal year 2002.

The Shared Agenda of Global Health

On the eve of the new millennium, CDC's global linkages were evident. The spread of infectious diseases from developing to developed countries, the opposite movement of unhealthy habits like smoking and reliance on motor vehicles, and concerns about health security were creating a common public health agenda worldwide, and CDC was committed to expanding its activities in support of global health (*18*). This involved forging stronger ties with the World Health Organization (WHO), recognizing that its successes and CDC's were integrally aligned, and enhancing existing ties with the World Bank to address the development challenges of the 21st century.

With the worldwide eradication of polio seemingly within reach, CDC created the STOP (Stop Transmission of Polio) program in 1998, in collaboration with WHO and other partners. Modeled on the teams recruited from CDC to interrupt transmission of smallpox in the final phase of eradication, the program mobilized short-term CDC teams to provide field support for local polio eradication efforts.

CDC's Global AIDS Program (GAP) began in 2000 and now works in 25 countries with a budget of more than $700 million. GAP leverages CDC's efforts to prevent HIV infection, improve care, and build capacity

to address the growing global HIV/AIDS pandemic. The program provides financial and technical assistance through partnerships with communities, governments, and national and international entities working in resource-constrained countries.

CDC also pioneered programs to extend global public health efforts beyond infectious disease control. In collaboration with WHO's Tobacco Free Initiative, CDC was involved in global surveillance to monitor tobacco use, and the two agencies provided technical assistance to nations administering the Global Youth Tobacco Survey to track smoking prevalence, exposure, and attitudes.

Conclusion

At the turn of the 21st century, several truisms about public health held CDC in good stead. First was the primacy of state and local health departments and the vital base of infrastructure, not just CDC buildings, but adequate resources throughout the system, a well-trained and well-equipped workforce, and capable state and local partners. Another principle was the importance of looking ahead to anticipate new threats and ensure the capacity to address them, as CDC did with the threat of bioterrorism, the early recognition of the obesity epidemic, and the recognition of the global implications of tobacco use. Above all, CDC was able to maintain and strengthen its "branding" as an institution of high scientific integrity, a provider of effective and timely public health interventions, and a reliable and understanding partner for domestic health agencies and global organizations.

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In commemoration of CDC's 60th Anniversary, MMWR *is departing from its usual report format. This is the sixth in a series of occasional commentaries by directors of CDC. The directors were invited to give their personal perspectives on the key public health achievements and challenges that occurred during their tenures.*

Jeffrey P. Koplan, M.D., M.P.H., came to CDC as an Epidemic Intelligence Service officer in 1972. He served as director of CDC's National Center for Chronic Disease Prevention and Health Promotion during 1988--1994. From 1995 to 1998, he was president of the Prudential Center for Health Care Research, then returned to serve CDC as director of the agency from 1998 to 2002. He is currently Vice President of Academic Health Affairs at Emory University's Woodruff Health Science Center and director of Emory's Global Health Institute.

Figure 1

FIGURE 1. The CDC design element, featured here at the entrance to the CDC Roybal campus, was developed during Dr. Koplan's tenure as CDC director

Photo/CDC

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Figure 2

FIGURE 2. Dr. Koplan (center), of the Epidemic Intelligence Service class of 1972, participates in smallpox-related field care in Bangladesh during the 1970s

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